

Claims

1. A method of producing a joined body of a first member containing at least a ceramics and a second member containing at least a metal or a metal composite: the method comprising the steps of:

providing an adhesive composed of a metal containing at least indium and a material containing at least a component capable of reducing the melting point of indium between said first and second members to provide a laminate; and

heating said laminate at a temperature in solid-liquid coexisting range of an alloy comprising indium and said component to join said first and second members.

2. The method of claim 1, wherein said component is selected from the group consisting of tin, silver and the alloys thereof.

3. The method of claim 1, wherein said laminate is heated at a temperature not higher than 155 °C.

4. The method of claim 1, wherein said laminate is heated while said laminate is subjected to isostatic pressing.

5. The method of claim 4, further comprising the steps of:
vacuum packaging said laminate, and
containing said packaged laminate in a sealed container filled with an inert gas,

wherein said laminate is subjected to isostatic pressing in said container with said inert gas.

6. The method of claim 4, further comprising the step of reducing the temperature of said laminate after said heating to room temperature while said isostatic pressing of said laminate is continued.

7. The method of claim 1, wherein said adhesive has a shape of a

foil.

8. The method of claim 1, wherein said material for reducing melting point is provided between said adhesive and said first member.

9. The method of claim 1, wherein said material for reducing melting point has a shape of a foil or film.

10. The method of claim 1, wherein said first member is a semiconductor wafer supporting member.

11. The method of claim 10, wherein said supporting member is an electrostatic chuck and said second member is a cooling flange.

12. The method of claim 1, wherein a first hole is provided in said first member, a second hole is provided in said second member, said method further comprising the step of providing an air-tight sealing member between said first hole and said adhesive and between said second hole and said adhesive when said first and second members are laminated so that said sealing member directly contacts with said first and second members to secure sealing.

13. A joined body produced by the method of claim 1.

14. A joined body comprising a first member containing at least a ceramics, a second member containing at least a metal or a metal composite and a joining layer between said first and second members;

wherein said joining layer comprises a phase of an alloy containing indium and a component capable of reducing the melting point of indium.

15. The joined body of claim 14, wherein said component is selected from the group consisting of tin, silver and the alloys thereof.

16. The joined body of claim 14, wherein said first member is a semiconductor wafer supporting member.

17. The joined body of claim 16, wherein said supporting member is an electrostatic chuck and said second member is a cooling flange.

18. The joined body of claim 14 further comprising an air-tight sealing member, wherein a first hole is formed in said first member, a second hole is formed in said second member, said sealing member is provided between said first hole and said joining layer and between said second hole and said joining layer, and said sealing member directly contacts said first and second members.